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Non-Enzymatic Glucose Sensors Involving Copper: An Electrochemical Perspective

Abstract

Non-enzymatic glucose sensors based on the use of copper and its oxides have emerged as promising candidates to replace enzymatic glucose sensors owing to their stability, ease of fabrication, and superior sensitivity. This review explains the theories of the mechanism of glucose oxidation on copper transition metal electrodes. It also presents an overview on the development of among the best non-enzymatic copper-based glucose sensors in the past 10 years. A brief description of methods, interesting findings, and important performance parameters are provided to inspire the reader and researcher to create new improvements in sensor design. Finally, several important considerations that pertain to the nano-structuring of the electrode surface is provided.

Keywords

Copper; Glucose; Non-Enzymatic; Sensor